

APPENDIX A

MONITORING AND EVALUATION PLAN

Monitoring and evaluation will be conducted to determine whether the RMP decisions are being implemented, whether the objectives of the RMP are being accomplished, and whether the RMP continues to be consistent with related plans. If a variation warranting management concern is found, the reasons for the variation will be examined and corrective actions will be taken as appropriate. Chapter 1 contains a discussion of monitoring and evaluation, maintenance, amendment, and revision of a RMP.

Resource	Component	Location	Technique	Unit of Measure	Frequency	Variation From RMP Warranting Management Concern	Annual Cost
RMP Decisions	Implementation of the RMP	Planning Area Wide	Managers and Specialists interviews and	Various	5-year intervals	Any indication that decisions are not being implemented, objectives are not being met, or the RMP is no longer consistent with related plans. If conditions have changed and affect the entire plan or major portions, a revision may be necessary.	\$ 3,000
	Accomplishment of RMP Objectives	Planning Area Wide	file searches		5-year intervals		
	Consistency with Related Plans	Planning Area Wide	Review of Related Plans		Ongoing		
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Fire Management	Wildfires	Planning Area Wide	Fire Reports	Number of fires Acres burned	Annually following fire season	5 percent increase in number of fires or average acres burned over a ten-year period.	\$ 500
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Wildlife	Bliss Rapids Snail	Box Canyon	Census snails	Number of snails	Annually	Any decrease in the number of snails.	\$ 500
	Ferruginious Hawk	Natural and artificial nest sites	Observe sites during breeding season	Number of occupied sites	Annually	Any loss of occupied sites	\$ 175
	Swainson's Hawk	Natural and artificial nest sites	Observe sites during breeding season	Number of occupied sites	Annually	Any loss of occupied sites	\$ 175
	Burrowing Owl	Selected natural and artificial nest sites	Observe sites during breeding season	Number of occupied sites	Annually	10 percent loss of occupied sites	\$ 450

MONITORING AND EVALUATION PLAN (Cont.)

Resource	Component	Location	Technique	Unit of Measure	Frequency	Variation From RMP Warranting Management Concern	Annual Cost
Wildlife (Cont.)	Shoshone Sculpin	Box Canyon/ Blueheart Springs	Observe site	Amount of water and sedimentation	Annually	Any decrease in water or increase in sedimentation	\$ 200
			^{1/} Census sculpin	Number of sculpin	Every 3 years or as needed	Any decrease in number of sculpin	\$ 500
	Ring-Necked Pheasant	Selected Isolated Tracts	Nest searches	Number of nests	Annually	20 percent decrease	^{2/} \$ 2,100
			Transects	Number of birds	4 times yearly	20 percent decrease	^{2/}
	Gray Partridge	Selected Isolated Tracts	Transects	Number of birds	4 times yearly	20 percent decrease	^{2/}
	Sage Grouse	Selected trend leks	Observe leks during breeding season	Number of males	Annually	Any decrease below 1982 population levels	\$ 350
		Nesting and wintering habitat	Analysis of fire reports	Acres of brush loss	Every 3 years or as needed	More acres of brush burned than planned for brush control	\$ 300
			Frequency	Frequency of key forbs		20 percent decrease in key species.	
			Extensive browse method	Browse age and form class		20 percent increase in unsatisfactory browse	
	Pronghorn	Winter range	Aerial census	Number of animals	Annually	30 percent decrease	\$ 0 ^{3/}
		Summer range	Aerial census	Number of animals	Annually	30 percent decrease	\$ 0 ^{3/}
		Key winter range	Analysis of fire reports	Acres of brush loss	Every 3 years or as needed	More acres of brush burned than planned for brush control	\$ 300
			Frequency	Frequency of key forbs		20 percent decrease in key species.	
			Extensive browse method	Browse age and form class		20 percent increase in unsatisfactory browse	
	Mule Deer	Winter range	Aerial census	Number of animals	Annually	30 percent decrease	\$ 0 ^{3/}
		Summer range	Transects	Number of animals	4 times yearly	50 percent decrease	\$ 0 ^{2/}
		Key winter range	Analysis of fire reports	Acres of brush loss	Every 3 years or as needed	More acres of brush burned than planned for brush control	\$ 300
			Frequency	Frequency of key forbs		20 percent decrease in key species.	
			Extensive browse method	Browse age and form class		20 percent increase in unsatisfactory browse	

MONITORING AND EVALUATION PLAN (Cont.)

Resource	Component	Location	Technique	Unit of Measure	Frequency	Variation From RMP Warranting Management Concern	Annual Cost
Wildlife (Cont.)	Hybrid Trout	Vineyard Creek	Water samples	Sedimentation	Annually	Any other than a decrease below 100 ppm in return flow	\$ 200
	Non-Game Species	Selected Isolated Tracts	Transects	Number of birds	4 times yearly	50 percent decrease	\$ 0 ^{3/}
		8 habitat sites	Transects	Number of birds	Annually	50 percent decrease	\$ 200
1/ These projections could change if there is an unexpected and drastic change in the water supply or other habitat values important to sculpin.							
2/ One monitoring study evaluates all of these species. The \$2,100 cost for ring-necked pheasant also covers many other species.							
3/ This information is obtained from the Idaho Department of Fish and Game.							
Livestock Forage	Trend	All "I" and "M" allotments; "C" allotments as needed	Frequency ^{1/} cover, and photographs	Percent frequency of key species; ground cover in percent	3-year intervals or one grazing cycle for rest-rotation systems	Change to downward trend	\$ 4,250
	Utilization	All "I" and "M" allotments ^{2/} ; "C" allotments as needed	Key forage plant method (draft Manual 4523) and mapping of utilization classes	Percent utilization of forage removed	Annually	Utilization greater than 60 percent on key species	\$10,600
	Actual Use	All allotments	Actual use submitted by livestock operators; livestock counts and compliance checks	AUMs	Annually	Consider with temperature and precipitation to help determine why utilization is at monitored level	\$3,650
	Condition	All allotments	Range condition guide outlined in National Range Handbook	Percent composition (determined by air-dry weight) compared to expected climax composition	10-year intervals	Decline one condition class	\$ 4,590
	Climate	All allotments	National Oceanic Atmospheric Administration reports	Inches of precipitation and degrees Fahrenheit	Monthly during growing season Summarize Annually	Consider with actual use to help determine why utilization is at monitored level	\$ 600
1/ Existing photo trend plots will be converted to frequency on "I" allotments if significant conflicts exist. The original plots will be retained for periodic reading and photographing. Photo trend plots will be maintained in "M" allotments.							
2/ Utilization will not be done on "M" allotments with sheep grazing only.							

MONITORING AND EVALUATION PLAN (Cont.)

Resource	Component	Location	Technique	Unit of Measure	Frequency	Variation From RMP Warranting Management Concern	Annual Cost
Wilderness	Quality of Wilderness Values	WSAs Designated	Photo inventory	Number of man-caused impacts	Annually	Any adverse impact on wilderness values	\$ 6,000
	Visitor Use	WSAs Designated	Permits, on-site registration, observation, and interviews	Visitor days	Annually	Increase of 10 percent or more over projected use in the Wilderness Management Plan	\$ 6,000

Natural History	Condition of Cave Resources	Areas of Geological Interest	Photo Inventory	Number of impacts	Once every 5 years	Any new incidences of collecting or vandalism in any cave	\$ 1,000

Cultural Resources	Condition of Cultural Resources	Cultural Resource Management Plan areas	Patrol and observation	Number of impacts on sites	3 to 5 trips annually	Any adverse impact to sites	\$ 3,000
		The remainder of the planning area	Patrol and observation	Number of impacts on sites	3 to 5 trips per year	Any adverse impact to sites	\$ 3,000

Recreation	ORV	Cedar Fields and Snake River Rim	Observation	Visitor Use Days	Bi-weekly April thru November	10 percent difference from projected levels	\$ 1,250
		Cedar Fields and Snake River Rim	Observation and photography	Number of trails	Bi-weekly April thru November	10 percent difference from ORV designations	
	River Floating	Murtaugh	Observation traffic counters visitor registration	Visitor Use Days	Weekly in season April thru June	25 percent difference from anticipated levels	\$ 1,250
	All recreation activities for which VUDs have been calculated	Planning Area	Use Fish & Game, Idaho Parks & Recreation, and BLM baseline data with methodology to calculate VUDs	Visitor Use Days	5-year intervals	25 percent difference from anticipated levels	\$ 250
Fishing, Nature Study, Hiking	Visitor Use Days	Box Canyon, Vineyard Creek	Observation	Visitor Use Days	2 times each year June and October	If impacts are incompatible with management plan	None: part of regular use supervision

MONITORING AND EVALUATION PLAN (Cont.)

Resource	Component	Location	Technique	Unit of Measure	Frequency	Variation From RMP Warranting Management Concern	Annual Cost
Soil	Cover/Erosion	Cedar Fields SRMA and the following grazing allot- ments: Antelope, Camp III, Common, Dinky, Goose Lake, Gunnery, Hunt, Kimama, Lagoon, Pocket, Poison Lake, Poleline, South Gooding, Star Lake West, Tunupa, Wendell Cattle, Wildhorse	Photo reconnais- sance survey, point step transects as needed	Percent ground cover, acres affected	3 to 5 year intervals	An increase of 10 percent in average erosion rates, new sandblow areas, or water erosion areas	\$ 2,500

APPENDIX B

FIRE MANAGEMENT

GENERAL FIRE ECOLOGY

The fire ecology of the planning area is strongly influenced by cheatgrass, which occurs on over 75 percent of the area. Fire management/ecology considerations in this area are based on the relationship between cheatgrass and fire and the resulting effects on native and seeded species. Cheatgrass is more flammable than native species, and is flammable four to six weeks earlier in the summer as well as one to two months later in the fall (Stewart and Hull 1949). The first wildfire of the season usually occurs during late June in the Shoshone District, which is soon after cheatgrass matures. Native perennials are easily killed by burning at this time (Wright and Klemmedson 1965).

Research summarized by Wright, Neuenschwander, and Britton (1979) provides specific information on the fire effects of individual species. The fire responses shown in Table B-1 are adapted from this publication.

FIRE ECOLOGY ZONES (See Map 6)

Zone 1

This zone consists of large, uniform areas of public lands with drastically altered vegetation. The dominant plant species is cheatgrass and perennial grasses other than Sandberg bluegrass are rare. Sagebrush and seedlings of crested wheatgrass are found only in scattered pockets.

Portions of this zone have a high fire frequency and the entire zone has a high potential for very large fires. Summer wildfires would result in increased erosion hazards on sandy areas, but would result in only minor changes in the present vegetative composition. Cheatgrass is highly competitive and recovers rapidly after burning. Pre-burn plant composition would generally be reached within two to three years after burning. This zone covers 19 percent (225,118 acres) of the Monument Planning Area.

Zone 1A

This area differs from the rest of Zone 1 in that the fire frequency is much higher. These lands have the highest fire frequencies in the planning area, with fire frequencies as low as one large fire every five years. This zone covers 8 percent (90,972 acres) of the planning area. Present vegetation and vegetative responses to wildfire in this zone are the same as for Zone 1 lands.

Zone 2

This zone consists of large areas of public lands with drastically altered vegetation. Cheatgrass is the dominant species, but large areas have been seeded to crested wheatgrass. Sagebrush and other native species are rare to absent except in scattered remnants.

The potential for very large fires is high in this unit, although lower than in Zone 1. An area of high frequency of small fires exists along the railroad on the north side of this zone. This zone covers 14 percent (161,704 acres) of the planning area.

Summer wildfires would not seriously affect the seeded areas, although a short-term increase in erosion hazards would occur and rest from grazing would be required after burning. Growing conditions are favorable to cheatgrass. Cheatgrass can be expected to increase after burning in the remaining pockets of native vegetation (Young, Evans, and Major 1972; Stewart and Hull 1949). Fire effects on the remainder of Zone 2 lands would be the same as for Zone 1 lands.

Zone 3

The vegetation of this zone is similar to that occurring on Zone 2 lands, but sagebrush and rabbitbrush are more abundant, particularly in the eastern portion of the zone.

The public lands are less contiguous and in smaller blocks than in Zone 2, and fires are less frequent in this zone as well. The portion of Zone 3 lands from Minidoka to American Falls has historically had smaller fires due to three factors: (1) excellent cooperation in suppression activities by the residents; (2) numerous sand blows and rocky areas with sparse vegetation that serve as firebreaks; and (3) high humidity during night and evening hours aids suppression efforts.

Summer wildfires would significantly reduce the existing brush populations, although few other native species would be affected. Cheatgrass is highly competitive and would replace brush after burning. The seeded areas would not be seriously affected, although a short-term increase in erosion hazards would occur and rest from grazing should be provided after burning. All fires have the potential to create serious erosion problems on the eastern portion of this zone. This zone covers 11 percent (127,555 acres) of the planning area.

Zone 4

This zone includes blocks of public lands that are dominated by several species of sagebrush and support varying amounts of native species in the understory. Fire frequencies are low, but the potential for large fires is high. There are 308,918 acres (26 percent) of this zone.

Summer wildfires have the potential to drastically alter the vegetative composition of this zone. Existing native species, especially sagebrush, would be decreased by summer wildfires. Cheatgrass is common throughout the zone and is highly competitive here also. It would increase rapidly after each wildfire as native species are killed by burning.

Prescribed burning can be a viable alternative for brush control, but some increase in cheatgrass should be expected in the space created by brush mortality. Although prescribed burning could be beneficial, the potential exists to convert the vegetation to a cheatgrass dominated community with frequent burning (Stewart and Hull 1949; Young, Evans, and Major 1972).

Zone 5

This zone is made up of those areas on the north end of the planning area that have low potential to be dominated by cheatgrass. One percent of the planning area (19,471 acres) is included in this zone. Idaho fescue is the dominant potential understory species and the climatic regime of these areas is less favorable to cheatgrass. Zone 5 lands are in fair or good ecological condition, and considerable competition with cheatgrass occurs from native perennials. Unless burning causes unexpected mortality of perennials, competition with perennials would prevent a significant increase of cheatgrass in this zone.

Fire frequencies have been low on most of this zone, although there is evidence of frequent burning on small areas. There have been no fires recorded during the past 25 years. The potential for large fires is low to moderate.

Summer wildfires would result in some mortality on understory species, but only minor changes in composition other than on sagebrush would occur. This zone has the highest potential for beneficial vegetative response to prescribed burning.

Zone 6

This zone consists of sparsely vegetated lava flows. These lavas rarely, if ever, burn and are often used as firebreaks. This zone covers 21 percent (245,251 acres) of the planning area.

STANDARD OPERATING PROCEDURES

The present Bureau policy is to aggressively suppress all new fires on or threatening public lands. Exceptions to this policy occur where management has analyzed alternatives to full suppression and prepared a written course of action prior to fire occurrences. These plans are termed Limited Suppression Plans and they establish criteria under which fires may be allowed to burn with little or no suppression action.

Less than full suppression also occurs whenever multiple fires ignite simultaneously. In these situations, priority is determined by value-at-risk. These values are predetermined by evaluating each resource separately to determine either beneficial or detrimental effects fire has on that resource. A numerical rating is given each resource, plus being detrimental and minus beneficial. After each resource has been evaluated individually, the totals are summarized to establish the values. Crews are dispatched to fires with the highest values until all crews are utilized. Fires with lower values may have delayed suppression times.

Less than full suppression may also occur whenever fires ignite in an area proposed for prescribed fire. These fires may be allowed to burn with little or no suppression action, but only when conditions are within the limits specified in approved, site-specific prescribed burn plans.

The Bureau cooperates with adjacent landowners on a case-by-case basis to reduce fire hazard where efforts are cost effective and the results will benefit BLM's fire management program. Cooperative efforts may range from consulting with private landowners on hazard reduction plans, to development of cooperative agreements and performance of hazard reduction.

GENERAL FIRE SUPPRESSION METHODS

The suppression policy of the Shoshone District is to extinguish fires with the least amount of surface disturbance possible. Whenever burning conditions and terrain are such that direct attack is not feasible, the suppression strategy is to burn out from existing natural barriers and established control points, such as roads.

Surface disturbing equipment, such as bulldozers, are utilized only with management approval. First priority is clearing of existing roads and second priority, when all other methods are exhausted, is construction of new control lines.

TABLE B-1

SUMMARY OF FIRE EFFECTS ON MAJOR PLANT SPECIES 1/

Species	Response to Fire	Remarks
Cheatgrass	Undamaged	Any reduction in cheatgrass stands is usually short-lived.
Crested wheatgrass	Undamaged	Full stands difficult to burn.
Bluebunch wheatgrass	Slight damage	Can be damaged if burned in a dry year.
Thurber needlegrass and needle-and-thread	Severe damage	Generally among the least fire-resistant bunchgrasses. A 50 percent reduction in basal area should be anticipated.
Prairie junegrass	Undamaged	Probable increase in density for several years after burning.
Sandberg bluegrass	Undamaged	Fire damage is generally minimal on such small plants.
Idaho fescue	Slight to severe damage	Burning with adequate soil moisture appears to cause minimal damage.
Sagebrush	Non-sprouter--severely harmed	Good seed crop before burning hastens recovery.
Rabbitbrush	Vigorous sprouter--enhanced.	May be killed by early summer burns.

1/ The effects described are from dormant season (late fall or early spring) burning except as noted and represent much better responses than those that occur with burning during the growing season. All species can be severely harmed by burning during the growing season. Primary damage during the growing season in the planning area occurs from burns occurring between June 25 and July 25.

APPENDIX C

WILDLIFE

METHODOLOGY

Bald Eagle

Bald eagle distribution is based on results of the National Wildlife Federation's bald eagle midwinter survey that has been conducted in the Shoshone District since 1979. Major open rivers and large bodies of water were surveyed by fixed wing and additional routes were driven. All details are on file in Shoshone.

Bliss Rapids Snail

Information on this poorly-known species was taken from Bowler (1980) and Taylor (personal communication of 2/13/84).

Ferruginous Hawk and Swainson's Hawk

Ferruginous hawk and Swainson's hawk nest sites were inventoried in 1976 as part of a systematic raptor survey lead by Donald P. Kyker, Jr. The report is on file in Shoshone. Additional searches specifically for ferruginous hawk nests were conducted by Terrell Rich in 1981, 1982, and 1983. Effects of the alternatives were assessed by professional judgment.

Burrowing Owl

Burrowing owl nest sites were searched for in 1976 as part of a systematic raptor survey lead by Donald P. Kyker, Jr. The report is on file in Shoshone. Since 1976, the Monument Area Biologists, Jim Silva and Terrell Rich, have both put considerable effort into systematic nest site searches

and habitat use. Several detailed reports are on file in Shoshone. Effects of the alternatives were assessed by professional judgment.

Shoshone Sculpin

Shoshone sculpin habitat and population sizes were studied by Jack Griffith of the Department of Biology, Idaho State University, under contract with the Shoshone District BLM. Possible effects of the alternatives on the sculpin were taken from the final report, "A survey of Shoshone Sculpin (*Cottus greeniei*) populations in Box Canyon and Blue Heart Springs, Idaho (1981)." This report is on file in Shoshone.

Method for Calculating Effects on Wildlife Numbers

Numerical estimates of the effects of each alternative on populations of ring-necked pheasants, gray partridge, pronghorn, mule deer, and non-game species were made to aid evaluation of alternatives. For each species, the total habitat acreage was partitioned into categories of different habitat quality and, hence, different densities of animals. The net gain or loss of animals in each alternative was then determined by summing the gains or losses of animals caused by each action in that alternative. Where net effects seemed unreasonable, in light of professional judgment, a density value was changed uniformly in all alternatives and net effects recalculated. This was repeated until all effects of individual activities and all net effects seemed reasonable. The estimates listed are for general comparison only. Accuracy is probably within 25 to 50 percent of true numbers. All assumptions, density estimates, and calculations are on file in Shoshone.

Ring-Necked Pheasant and Gray Partridge

Total current numbers of pheasants and gray partridge in the planning area were estimated using data in "A Plan for Managing Idaho's Upland Game Resources in 1981-1985" (draft) and "Annual Upland Gamebird Report 1978" by the Idaho Department of Fish and Game, and "Methodology for Computing Wildlife Economic Values for use in Activity Plan Benefit/Cost Analysis", by the Idaho State Office, BLM (1981). Estimates of habitat quality on Isolated Tracts was aided by a special survey of these tracts, existing and potential, conducted by Rebecca Parmenter in 1982. This report is on file in Shoshone. Effects were calculated as above.

Pronghorn

Pronghorn numbers were taken from "A Plan for Managing Idaho's Pronghorn Antelope, Moose, Bighorn Sheep and Mountain Goat Resources in 1981-1985" (draft) by Idaho Department of Fish and Game. Pronghorn distribution at different times of the year was determined by plotting all known sightings, by date, on 1 inch = 1 mile maps. Sighting data came from BLM Biologists' notebooks, wildlife observation forms, and aerial surveys, and from Idaho Department of Fish and Game's Wildlife Inventory Report. These data include both incidental sightings and systematic surveys. Effects were calculated as above.

Mule Deer

Mule deer numbers were taken from "Mule Deer 1981-1985" species management plan by Idaho Department of Fish and Game. Distribution and effects were determined as for pronghorn.

Non-Game

Non-game species are represented by breeding pairs of non-game birds. Estimates of nesting densities of these species are based on three years of data from ten line transects placed in different xeric habitat types in the planning area. All data and references are on file in Shoshone.

Sage Grouse

Sage grouse lek sites and seasonal distribution data have been assembled from BLM Biologists' notebooks, wildlife observation reports, and systematic surveys. The Wildlife Inventory Report by Idaho Department of Fish and Game and other records from that agency have been searched. Total numbers of birds were determined by standardizing the maximum number of males on each known lek by the count at Steamboat Lake, which has been exceptionally well monitored since 1954. To the total male count was added an equal number of females and three young per female.* This was taken as a maximum population size. A minimum population size and effects were estimated by professional judgment.

* Bob Autenrieth, personal communication.

Hybrid Cutthroat/Rainbow Trout

Hybrid cutthroat/rainbow trout information was obtained from Bob Bell (personal communication), Fishery Biologist for Idaho Department of Fish and Game. Possible effects of the alternatives were taken from a report by Alan Thomas (1980) entitled "Impacts of Irrigation Runoff on a Unique Fishery Resource in Vineyard Creek (Jerome County)."

Isolated Tracts

To aid in the alternative development of this plan, all existing Isolated Tracts and many potential Isolated Tracts were categorized by three staff biologists as being of high, medium, or low quality. Factors considered included the degree of habitat improvement made to date, quality of pheasant winter and nesting habitat, accessibility, presence of sensitive species, presence of riparian habitat, recreation value, and degree of isolation from other good wildlife habitat.

CRITERIA FOR SELECTING ISOLATED TRACTS FOR WILDLIFE (L11) FROM AGRICULTURAL ENTRY (T2) AREAS

As discussed in the description of the alternatives, up to 15 percent of the T2 areas could be retained in public ownership and managed as L11 areas under the Isolated Tracts HMP. The areas would be selected on a case-by-case basis as T2 lands are considered for transfer.

The following criteria are intended to assure that sufficient habitat is provided for upland gamebirds, primarily winter habitat for ring-necked pheasants, within areas developed for intensive agriculture. Since pheasants are dependent on agriculture for survival, selection of tracts for wildlife management which would make agricultural development proposals unfeasible would benefit neither pheasants nor agricultural development. In these cases, arable land would not be selected for retention and management as L11 areas.

Criteria

1. Tracts selected for management as L11 areas would be distributed through the T2 areas so that areas developed for agriculture are within one-half mile of suitable winter cover.
2. Tracts would generally be selected in areas with existing suitable winter habitat (sagebrush live crown cover greater than 15 percent). However, tracts with potential for developing suitable cover could be selected if their location is key.
3. The minimum size of selected tracts would be 20 acres.
4. Tracts would not be selected from areas subjected to grazing unless the grazing was subsequently excluded.